

Note: Pullaiah (1997) reports three species of *Dimeria* i.e. *D. avenacea*, *D. ornithopoda* and *D. kanjirapalliana* in Andhra Pradesh. The present species differs from above in having winged, unawned upper glume.

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#### 34. POIKILOHYDROUS PLANTS IN NORTHERN WESTERN GHATS

Poikilohydry is a highly specialized adaptation shown by plants growing in conditions of periodic water stress. These species are more commonly known as desiccation tolerant or resurrection plants owing to their unique adaptation for sustaining during dry periods. At the beginning of a dry spell, the tissues of these plants lose water and shrivel. However, if small amounts of water become available from rainfall or streams, these plants absorb water and resume normal growth even during the dry period.

A few such species were noted in the northern Western Ghats region where dry period is very long, almost 7-8 months. The most common and typical examples are ferns *Cheilanthes farinosa* (Forsk.) Kaulf., *Selaginella* spp., *Microsorium membranaceum* (Don) Ching and *Pleopeltis nuda* (Hook.) Ching. These species grow in habitats where water stress is severe. *Cheilanthes farinosa* grows in rock crevices or is anchored in moss on rock faces. *Selaginella* spp. are often seen in disturbed forest undergrowth. *Microsorium membranaceum* and *Pleopeltis nuda* grow as epiphytes anchored in moss on tree trunks or on boulders. Moss species and liverworts such as *Anthoceros* spp., *Riccia* spp. also exhibit this character. These plants can become fully functional even when water is provided artificially.

In angiosperms, aquatic lithophytic members of Podostemaceae e.g. *Dalzellia ceylanica* (Gardn.) Wight, *Cladopus hookerianus* (Tul.) C. Cusset, *Polypleurum stylosum* (Wight) Hall and *Zeylanidium subulatum* (Gardn.) C. Cusset also show this adaptation. During the dry period, these plants appear only as greyish white marks on rocks in streambeds. With the approach of rain in June-July, the plants

start photosynthetic activity, flowering and fruiting occurs during October-December. The ability of these plants to withstand extreme dry conditions and high temperatures of uncovered rocky outcrops, and resume normal functions when water is available is ecologically interesting. Gaff and Bole (1986) reported desiccation-tolerant grasses (e.g. *Tripogon*) from shallow soils in rocky areas of India. This is the first report of this peculiar adaptation in diverse plant groups like ferns and aquatic angiosperms in India. Porembski and Barthlott (2000) have discussed global distribution of desiccation-tolerant plants. They have pointed out that Madagascar and African continent, esp. east Africa, are particularly rich in desiccation-tolerant species. Phytogeographically, Indian and African flora are known to have many common elements, but so far there is no similarity in poikilohydric taxa. The most well-known poikilohydric species in east and west Africa belong to Cyperaceae, Poaceae and Scrophulariaceae. None of the Cyperaceae or Scrophulariaceae members have been described from Indian literature as poikilohydrous. It would be interesting to study these families extensively in India to search for species with similar adaptation.

Poikilohydry is a very interesting adaptation from the ecological as well as physiological view. It can have many scientific and agricultural uses in future, such as studying physiology of water uptake, establishing drought resistant crops etc. It is also of horticultural interest as these plants can withstand dry condition very well. Owing to the property of rejuvenation, *Cheilanthes* and *Selaginella* species are often sold in tourist places as curiosities, as 'sanjeevani,

rejuvenating plants'. Extensive documentation and detailed research is necessary to identify more plants in Indian floras belonging to this peculiar ecological group.

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### 35. FLOWERS OF SAHYADRI: A CRITICAL APPRAISAL

FLOWERS OF SAHYADRI, a handy field guide, by S.H. Ingalhalikar is easy to carry and contains data on flowers of 500 species of the Western Ghats. The map highlights the geography of the areas covered; charts with scales are given for easy reference. The appendices make the references easier, faster and comfortable.

However, flowers of many related species appear identical, and it is sometimes difficult even for an expert to name the species correctly. Some of the pictures in the book are misleading. Flowers like *Pavetta crassicaulis* (p. 56, no. 382), *Tithonia diversifolia* (p. 70, no. 465), *Kleinia grandiflora* (p. 70, no. 302), *Argyreia boseana*, *Argyreia involucrata* (p. 90, nos. 33, 36), *Argyreia sericea* (p. 87, no. 38), *Argyreia elliptica* (p. 94, no. 35), *Eriocaulon sedgwickii* (p. 126, no. 210), *Smithia bigemina* (p. 158, no. 433), *Smithia setulosa* (p. 172, no. 436), *Eriocaulon tuberiferum* (p. 140, no. 211), *Pulicaria wightiana* (p. 157, no. 404), *Sonchus oleraceus* (p. 158, no. 439), *Senecio bombayensis* (p. 172, no. 426), *Senecio edgeworthii* (p. 105, no. 427) can be mistaken for any of their allies and vice-versa. There are several misidentifications in the book which is unfortunate. Some are listed below:

1. *Physalis peruviana* (p. 134, no. 391): The photograph is that of *Nicandra physaloides*. Not only is the scientific name but its common name also is erroneous. 'Popati' is a common name used for *Physalis* species and perhaps this has been copied from the source of the misidentified species. The common name is apparently not obtained from the locality where the plant has been photographed.
2. *Avicennia marina* (p. 39, no. 46): This is probably a picture of *Avicennia officinalis*, which is mentioned as a synonym of *A. marina*. Both species are distinct and are found in marine swamps of Konkan. The vernacular name cited for this species is incorrect. 'Tiwar' is used for species of *Barringtonia* in coastal Konkan, both for *Barringtonia acutangula* ('Newar' of the author) and *B. racemosa*. Pronunciation of many local names varies tremendously. Such names have to be verified with some standard books before their application to a new species and adding to the already existing confusion.
3. The correct name for 'Nana' is perhaps *Lagerstroemia parviflora* Roxb., which is erroneously called *L. lanceolata* by T. Cooke and it is not *L. lanceolata* Wall. ex Wight & Arn. (1834), also it is not *L. microcarpa* Wight (1842). *L. microcarpa* Wight is a different species found only in South India.
4. The correct name for 'Tupa' (p. 46, no. 93) under genus *Canthium* is *Canthium umbellatum* Wt. Sometimes it is only recognised under varietal rank and Gamble identified it as a variety of *Plectronia didyma* Brandis. Brisden (in Kew Bull. 48: 762. 1993) has retained it as *Psydrax umbellata*. (Wt) Brisden.
5. *Bombax insigne* (p. 47, no. 71) or 'Deo-savar' – Both of these appear to be doubtful. It is definitely not *B. insigne* of Wallich and its local name appears to be a new one.
6. The photograph of "Kabar" (p. 49, no. 99) called *Capparis spinosa* is that of *Capparis murrayana* Graham. *Capparis spinosa* L. is a much larger leaved species found at higher altitudes in the Himalayas. The prostrate plant which is generally found on river-beds in Pune and Raigad districts is described by John Graham, a Presidency Postmaster of Bombay in his Catalogue of Bombay Plants (1839). (see "Flora of Maharashtra" by M.R. Almeida, Vol. I, pp. 46-7, t. 42, lower figure, 1996).
7. "Pinela" (p. 103, no. 468): *Trachyspermum roxburghianum* is not the correct name for the plant found wild at Sinhagad, which is photographed. It is correctly called *T. stictocarpum* (Clarke) Wolf.
8. *Capparis rotundifolia* (p. 54, no. 98) is not a typical variety, but a local variety *C. rotundifolia* Rottl. var. *longispina* (Hook. f. ex Cooke) Almeida, which was described as *C. longispina* Hook. f. & Thomson, in Flora of British India. In comparison with *C. rotundifolia* Rottl., which has rounded leaves and short spines, this variety has ovate leaves with pointed apex and long sharp spines.
9. *Ceropegia sahyadrica* (p. 119, no. 120) should be placed in the synonymy of *Ceropegia lawii* Hook.